

STUMP GRINDER

ASSEMBLY GUIDE



Read this owner's manual carefully in its entirety before attempting to assemble this machine. Read, understand and follow all instructions on the machine before operation. Be completely familiar with the controls and the proper use of the machine before operating it. Keep this manual in a safe place for future and regular reference and for ordering replacement parts



This product picture is a schematic diagram, some details may not be exactly the same with the product you bought.

STUMP GRINDER



Original Instructions Instructions for Operation, Maintenance

Your stump grinder is intended for outdoor-use only and can be used to remove many trees stumps and exposed root systems close to ground level. By moving the blade in sweeping movements laterally over the top and front of the stump, you can gradually grind it away. Make sure you completely read and understand this manual before using the grinder for the first time.

WARNING

READ and UNDERSTAND THIS MANUAL COMPLETELY BEFORE USING THE GRINDER! Failure to properly operate, and maintain this grinder could result in serious injury or death to the operator or bystanders.

All machines have hazards associated with their operation. This stump grinder has certain special hazards, which you must aware of. As an operator or owner you have a duty to be aware of these hazards and know.

Preventive measures to take to avoid them. When reading this manual pay particular attention to avoiding these hazards.

In particular, be aware of the following:

- Know location of buried electrical and other utility lines.
- Do not allow children or untrained adults to operate.
- Wear eye protection and other personal protection against flying rocks and debris.
- Check that cutter wheel teeth are secured, sharp and not missing.
- Do not operate if operator presence bar fails to stop engine upon release.
- Make sure no children or bystanders are within 75 feet (25m) of stump grinding operation.
- Protect cars, windows and other objects within 75 feet (25m) from flying debris.
- Be prepared for machine "kickback" when initially contacting the stump.
- Be aware of potential for carbon monoxide (CO) poisoning.
- Prevent fires/explosions from fueling.
- Do not attempt to perform adjustments, clean unit while engine is running.
- Avoid burns from engine or hot exhaust.
- Avoid using in wet or icy conditions where falls may occur.

Details about these hazards are found throughout the manual and are summarized at the end of the manual under "Important Safety Information"

STOP

INSPECT COMPONENTS: Closely inspect to make sure no components are missing or damaged. See the "Receiving Your Unit" section for instructions on whom to contact to report missing or damaged parts.

HAZARD SIGNAL WORD DEFINITIONS

	<p>This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.</p>
	<p>DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</p>
	<p>WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
	<p>CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.</p>
	<p>CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.</p>
	<p>Neither the machine as a whole nor its internal components are intended for use in potential explosive atmospheres.</p>

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SPECIFICATIONS

Item Number							
Engine	RATO R210	Loncin G200F	Briggs & Stratton XR950/CR950	Kohler CH270	Yamaha MX200	Honda GX200	Ducar DH212-X
Displacement	212cc	196cc	212cc	208cc	192cc	200cc	212cc
New Power	7hp	6hp	6.5hp	6.5hp	6hp	6.5hp	7.5hp
General							
Net Weight	90KGS						
L*W*H	1575*680*1165mm						
Operating RPM	3600 RPM						
Type of Fuel	Gasoline						
Starting	Recoil						
Oil Sensor	Yes						
Wheel Tire	140/70-6						
Cutter Wheel							
Diameter	8.66" (220mm)						
Thickness	4.72" (12mm)						
Bearing	UCP205						
Cutter Wheel RPM	2200 rpm/min						
Drive	Direct Belt Drive Centrifugal Clutch						
Cutting Capacity							
Above Grade	9" (230mm)						
Below Grade	8" (203mm)						
Stump Diameter	20cm						
Teeth, Carbide Tips							
Steel Type	42CrMo						
Steel Hardness	HRC40-42						
Weight	1.59 lbs (0.72kg)						
Length*Width*Tip Length	4-1/4" (10.8cm)*2-13/16" (7.1cm)*1-1/2" (3.8cm)						

SPECIFICATIONS

Item Number							
Engine	RATO R420	Ducar DH420	Loncin G420F(D)	Briggs & Stratton XR2100	Kohler CH440	Yamaha MX400	Honda GX390
Displacement	420cc	420cc	420cc	420cc	429cc	402cc	389cc
New Power	15hp	15hp	15hp	13.5hp	14hp	12.8hp	13hp
General							
Weight	104KGS						
L*W*H	1730*760*1160mm						
Operating RPM	3600 RPM						
Type of Fuel	Gasoline						
Starting	Recoil / E-Start						
Oil Sensor	Yes						
Wheel Tire	145/70-6						
Cutter Wheel							
Diameter	9.45" (240mm)						
Thickness	4.72" (12mm)						
Bearing	UCP205						
Cutter Wheel RPM	2500 rpm/min						
Drive	Direct Belt Drive Centrifugal Clutch						
Cutting Capacity							
Above Grade	10" (254mm)						
Below Grade	9" (230mm)						
Stump Diameter	No Limit						
Teeth, Carbide Tips							
Steel Type	42CrMo						
Steel Hardness	HRC40-42						
Weight	1.59 lbs (0.72kg)						
Length*Width*Tip Length	4-1/4" (10.8cm)*2-13/16" (7.1cm)*1-1/2" (3.8cm)						

PART I

INTRODUCTION

ABOUT YOUR GRINDER

Owner/Operator/Renter Training

Read and follow all instructions and safety precautions presented throughout this manual. A summary of important safety information can be found at the end of the manual. Keep this manual for reference and review. If the owner of this unit is different than the operator, give a copy of this manual to any operator to read.

Rental Companies

All persons to whom you rent/loan this grinder must have access to this manual and read it. Advise all persons who will operate the machine to read it. You should also provide personal instruction on how to safely operate the grinder and remain available to answer any questions a renter/borrower might have. If videos are available, have renter watch training video.

Engine Instructions

For detailed engine operation and maintenance information, always refer to the engine Owner's Manual furnished with the grinder.

Product Suitability

Before using, the user shall determine the suitability of this product for this intended use and assumes liability therein.

Your stump grinder can be used to remove many tree stumps and exposed root systems close to ground level. By moving the blade in sweeping movements laterally over the top and front of the stump, you can gradually grind it away. Make sure you completely read and understand this manual before using the grinder for the first time. If you have any question, contact your retail or rental dealer or manufacturer.



WARNING: Never attempt to cut on a slope exceeding 15°

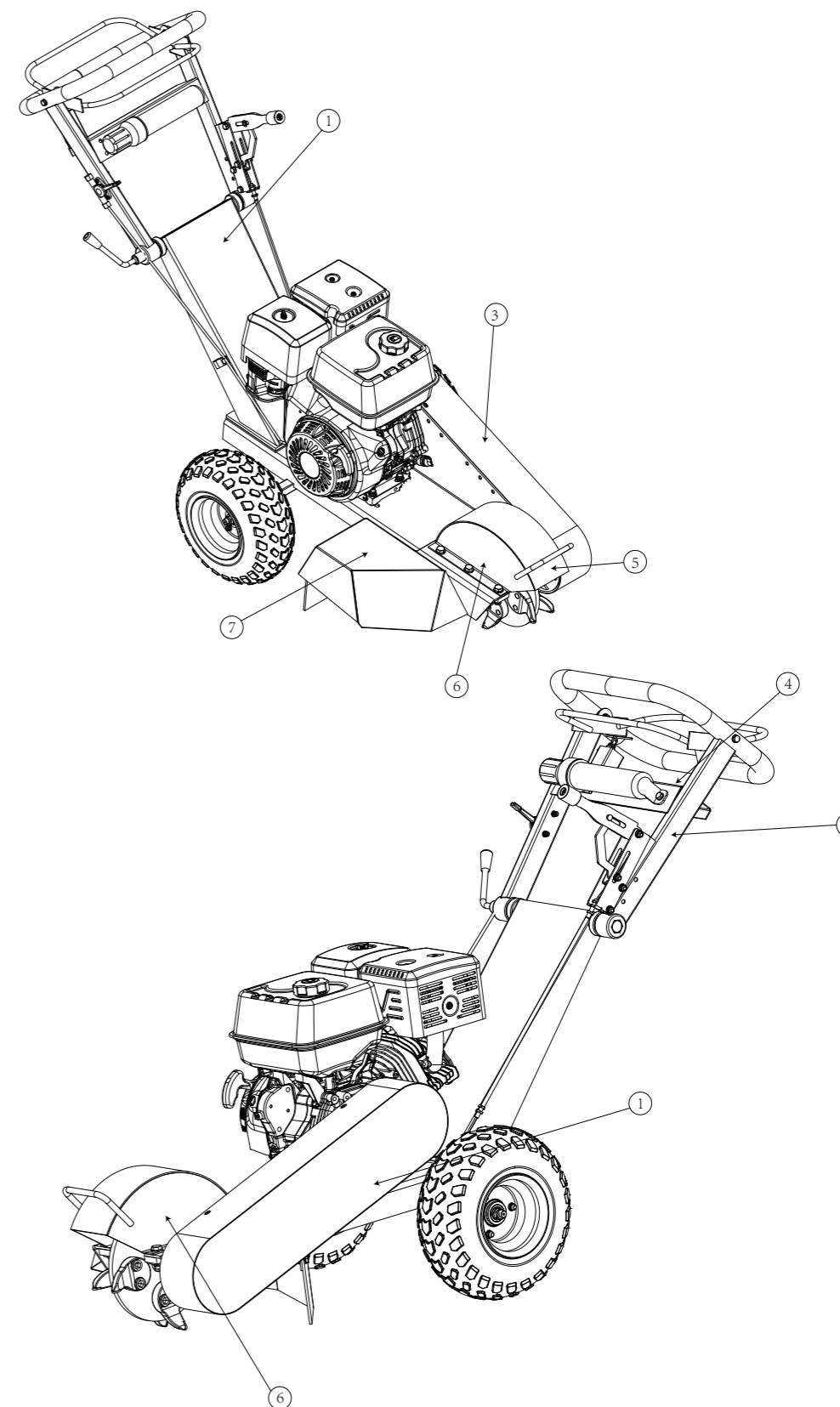
Exercise caution when cutting stumps on an incline, as the machine may shift or slide unpredictably. Never attempt to cut with the machine uphill or downhill from you as it may slide toward you or you may fall toward the machine. Cut only on a slope from the side.

The supplier is constantly improving its products. The specifications outlined herein are subject to change without prior notice or obligation. The purchaser and/or user shall assume liability for any modification and/or alterations of this equipment from original design and manufacturer.

Warranty Registration

Please fill out and submit the warranty registration card so that we have your contact information for any future product literature or replacement parts you may need.

SAFETY DECAL LOCATIONS



SAFETY DECALS



1

WARNING

- Always keep your Hands, Feet and Body away from the grinding area while the engine is running.
- Hearing Protection, Safety Glass and loose fitting Gloves must be worn while operating this machine.
- Keep Bystanders 6 metres (20 feet) away from the stump grinder.
- Always operate stump grinder on level ground only. Inspect the immediate area before grinding. Remove any foreign objects in the grinding area: bricks, rocks, wire and sticks. Locate and mark any sprinkler heads, water pipes, gaslines, electrical and telephone cables or any other hazard either below or above ground.

7

BRAKE

2

WARNING

Amputation & Entanglement Hazard Rotating Cutter

- Keep hands and feet away
- Contact with rotating teeth will cause serious personal injury
- NEVER operate without guards and covers in place

FLYING DEBRIS HAZARD

- Flying debris can travel up to 75 feet.
- Flying debris can bounce off the shield and hit nearby objects.
- NEVER allow anyone in the danger zone while grinding.
- ALWAYS position the machine to protect properly (both as buildings and vehicles) from flying debris.
- If equipped, rubber shielding is intended to direct debris away from the user's lower extremities.
- Wear long pants and closed shoes as well as eye and face protection.
- Replace shielding if worn or damaged.

6

DANGER

KEEP HANDS and FEET AWAY

5

PRECAUTIONS BEFORE STARTING:

- Check gas and oil levels.
- If unfamiliar with operation, please refer to the operator's manual.
- ALWAYS wear proper clothing and protective gear. This includes eye and ear protection, work gloves, long pants, and sturdy, non-slip footwear.
- Use of the stump grinder requires considerable strength and endurance. It should be operated only by an adult with adequate physical capability.
- Keep children away.

SPECIAL OPERATOR HAZARDS

- Read and follow the operator's manual before using.
- Before adding fuel, stop the engine and allow engine to cool for 2 minutes before refueling. Wipe up fuel spills immediately.
- Blade rotates at speeds similar to a rotary lawn mower and will throw stones, chips and debris up to 75 feet in any direction. Keep bystanders at least 75 feet away. Protect windows, autos or any other objects which may be damaged by flying debris.

4

WARNING

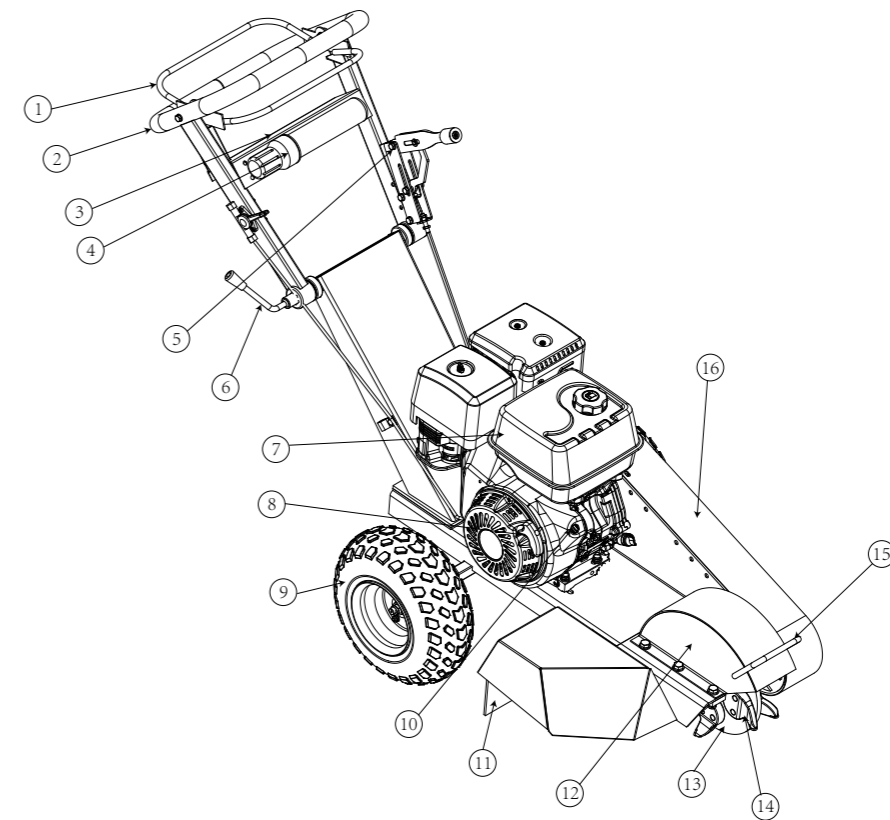
Personal Injury Hazard

NEVER attempt to use this machine without proper personal protection. When using this machine, you must wear the following:

- Eye protection
- Ear and hearing protection
- Heavy duty work gloves
- Sturdy, non-slip footwear
- Heavy duty, tight fitting clothing

3

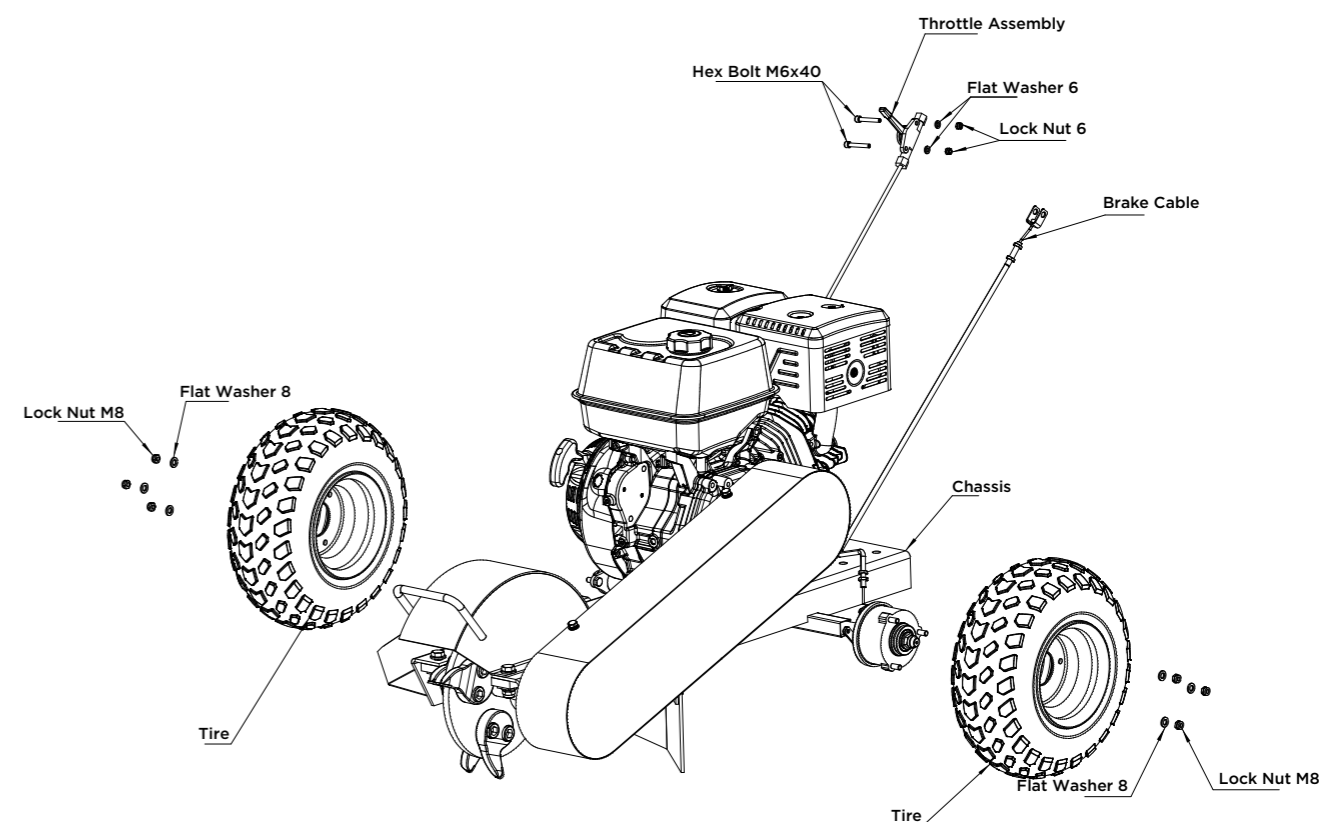
MACHINE COMPONENT IDENTIFICATION



Reference #	Description
1	operator presence Bar
2	Handle Bar
3	Throttle Control Lever
4	Manual Holder
5	Adjustable Brake Lever
6	Clamp Handle
7	Engine
8	Starter Grip
9	Wheel
10	Engine On/Off Switch
11	Rubber Baffle
12	Cutter Guard
13	Cutter Wheel
14	Cutter Teeth
15	Front Handle
16	Belt Cover

PREPARING FOR USE

Assembling the appliance



PART II

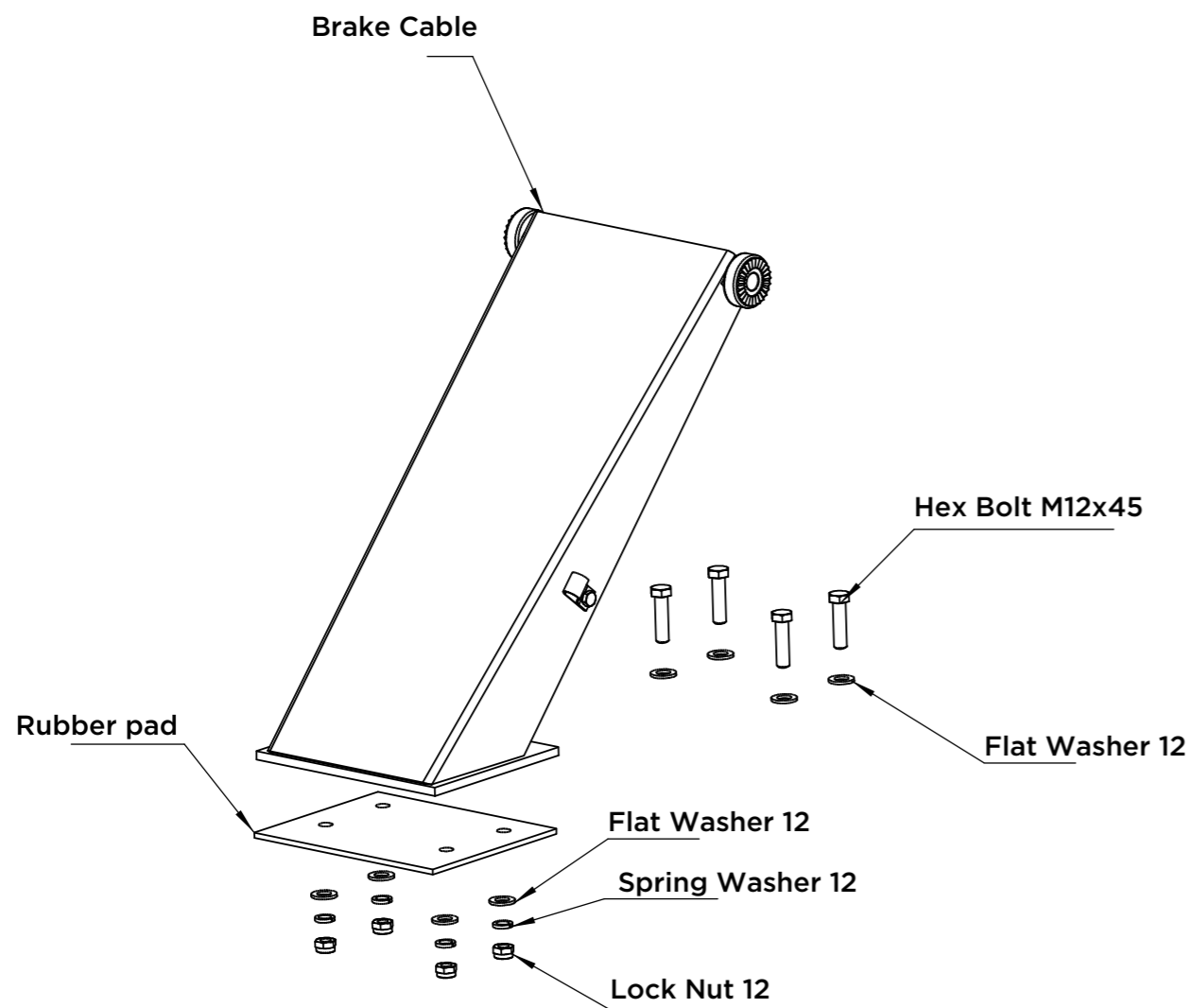
ASSEMBLING THE APPLIANCE

Wheels

Install both wheels on the axle and secure semi-tight with the provided lock nut M8 and flat washer 8, allowing the wheel to spin freely.

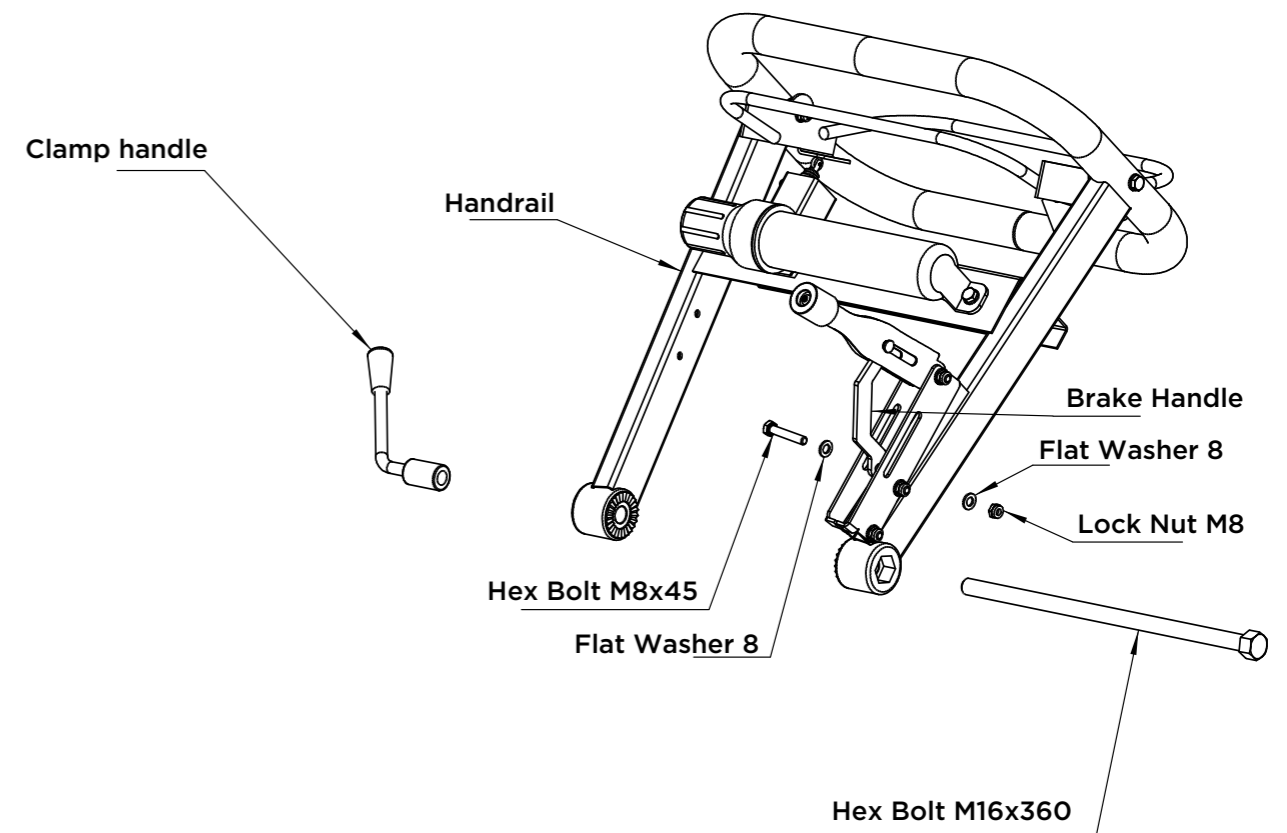
Throttle Assembly

Mount the throttle assembly to the handrail with hex bolt M6x40.



Handhold Assembly

Put the rubber pad on the chassis and install the handhold assembly on the chassis with provided lock nut 12,flat washer12,spring washer12 and hex bolt M12x45



Handrail

Mount the handrail to the handhold assembly with hex bolt M16x360,and tighten with clamp handle and flat washer6.

Brake Cable

Connect the brake cable to the brake handle with M8x45 hex bolt,flat washer8.

PART III

OPERATION

OPERATION

1. Pre-Start Check List & Procedures



CAUTION: Add engine crankcase oil. A new engine is shipped without oil. You must add the correct amount of oil to engine crankcase or engine will be damaged beyond repair.
Note: #92 gasoline fuel and 5w30 engine oil.

Before starting the engine you will want to make sure you have completed the following:

Marking Underground Utilities.

- Checking Controls.
- Checking Cutting Teeth.
- Checking/Adding Oil.
- Filling Stump Grinder Gasoline Tank.
- Inspecting Fuel System for Leaks.
- Locking Handle Bar.
- Wearing Personal Protection.
- Trimming Stump with Saw.
- Clearing Area of People and Objects.
- Working During Daylight.
- Each of these procedures is discussed in detail below.

Check Controls

All guards are in place and tight.
operator presence Bar is free moving.
Inspect tires and rims for looseness, damage, and tire inflation.

Check cutting teeth

Inspect cutting teeth for tightness and sharpness. Only use factory-approved parts for repair.

Check/Add oil

Check the oil level using the dipstick and add oil as needed.
Using a funnel, add oil up to the FULL mark o the dipstick with the recommended oil type for your engine and expected ambient conditions.
(See engine Owner's Manual for oil type and capacity, and more detailed oil check/-fill instructions).



WARNING: Burn Hazard

Never open oil fill port while engine is running. Hot oil can spray over face and body.

Fill stump grinder gasoline tank

Check the gasoline level in the engine's fuel tank. If needed, fill tank with fresh unleaded gasoline from a portable container, after first reading the warnings and instruction below.

- DO NOT fill the gas tank to the top. Gasoline may spill when operating on a slope.
 - DO NOT overfill the gasoline tank. Allow at least 1" of empty space below the fill neck to allow for fuel expansion.
- #92 gasoline fuel and 5w30 engine oil



WARNING: Gasoline fire/explosion hazard

Gasoline is highly flammable and explosive. Heat, sparks and flames can ignite gasoline vapors, which can become widespread during fueling. A flash fire ignition and/or explosion could result and cause serious injury or death. The following conditions could result in gasoline ignition/explosion:

- Gas vapor collection inside enclosures.
- Static electric sparks.
- Sparks from electric wiring, batteries, or running engines.
- Sources of heat (such as a hot engine or exhaust).
- Open flames, including pilot lights.

Inspect Fuel System/Check for Leaks

Inspect fuel system & check for leaks BEFORE starting grinder.



WARNING: Fuel leak hazard

A leaking fuel line no matter how small can be the source of a fire or explosion when starting or operating the engine.

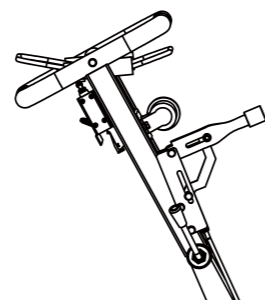
- Inspect the entire fuel system. Look for: Signs of leaks or deterioration, chafed or spongy fuel hose, loose connections, loose or missing fuel hose clamps, damaged gasoline tank, or defective gasoline shut-off valve.

If grinder is in an enclosed area and you smell gas, DO NOT start engine! DO NOT light a match. DO NOT flip on an electrical switch.

Exit area immediately leaving doors open and call fire department.

Locking Handle Bar

Handle is capable of folding when not in use.



Personal Protection

Use approved protective clothing and approved protective equipment when using the machine.

- Always wear safety glasses with side shields and a full-face shield.
- The use of ear plugs or other hearing protection device is also recommended for persons working within 15-20 feet (5-6.5m) of the running grinder for longer than a few minutes. Hearing can be damaged from prolonged, close-range exposure to the type of noise produced by this grinder.
- Wear long pants to protect legs from sparks, hot engine and flying debris.
- Never wear jewelry or loose-fitting clothing when starting or operating the grinder or any mechanical device. Loose or dangling apparel, jewelry or hair can become entangled in moving parts.
- Neither the machine as a whole nor its internal components are intended for use in potential explosive atmospheres.

Trim Stump with Saw	Cut or trim the stump preferably to ground level using a power saw.
Clear Area	Dig away the earth and remove any stones near the tree stump or roots that may interfere with your work.
Working During Daylight Hours	Only use the machine in daylight or in well-lit conditions. Never operate the grinder after dark.

2. Starting the Grinder

After you have completed the pre-start checking list and procedures, you are ready to start the grinder.

The following directions details how to start the engine of your grinder.



WARNING: Never attempt to use the grinder without proper protective equipment, particularly eye protection and a full-face shield.

To start the grinder:

Note: For additional engine starting instructions see your gasoline engine manual.

- Lock handle in the upright position.
- Place stump grinder into position with cutting wheel near the front-top edge of the stump.
- Use brake lever on handle to lock the wheel brake.

Note: For tighter brake adjustment, turn knob on top of brake lever. (See Maintenance & Repair sections for instructions).



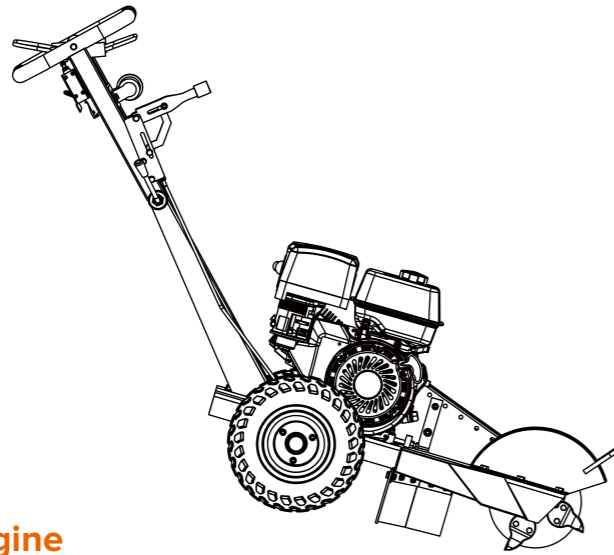
WARNING: Stay in the OPERATOR POSITION (Behind the machine) while actuating controls. Never leave grinder unattended.

- For cold engine, mover choke lever to the CLOSED position. To restart a warm engine, leave choke lever in OPEN position.
- Turn engine switch to the ON position.
- Grip operator presence bar and handle bar together in left hand.



WARNING: A rotating cutting wheel is very dangerous. Stay at the controls and keep others away until you are sure the blades has come to a complete stop.

- Pull the starter grip lightly until you feel resistance, then pull briskly. Return the starter grip gently. If the choke lever was moved to the CLOSED position to start the engine, gradually move it to the OPEN position as the engine warms up.
- If engine does not start, repeat steps 5-7.
- Press down on handle bar to lift cutter wheel off the ground.
- Grip throttle control lever and handle bar together in right hand. Centrifugal clutch will engage and cutter wheel will begin to rotate.



3. Stopping the Engine

Stop the engine using the following steps:

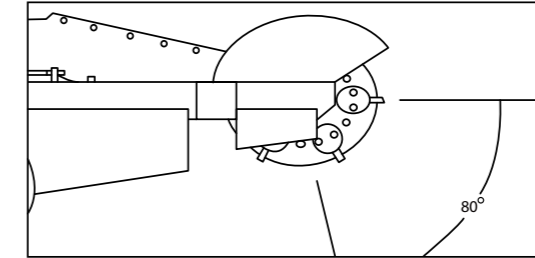
- While holding blade off ground, release the operator presence bar. The engine will stop. Wait until the blade completely stops. Lower the blade so it is resting against the ground.
- Make sure brake is set before leaving the controls, particularly if you are on an incline.
- Turn engine switch to OFF position.
- Allow the engine to cool for at least 30 minutes before releasing brake and moving to storage or transporting. A hot engine can be a fire hazard.

4. Grinding the Stump

4.1 REMOVING STUMPS

- Remove all loose pieces of wood, stones, wire and other debris from the area before beginning stump removal.
- Wind direction should be considered, as it influences the direction in which dust and wood chips are directed.
- Never operate the grinder after dark. There will be no adequate light for the operator to use the grinder safely.
- Always allow a cold engine time to warm up before cutting a stump.

- Only the portion of cutting wheel within the 80 degree area shown above should engage the stump. Never undercut the stump or use the bottom of the cutting wheel for cutting purposes.



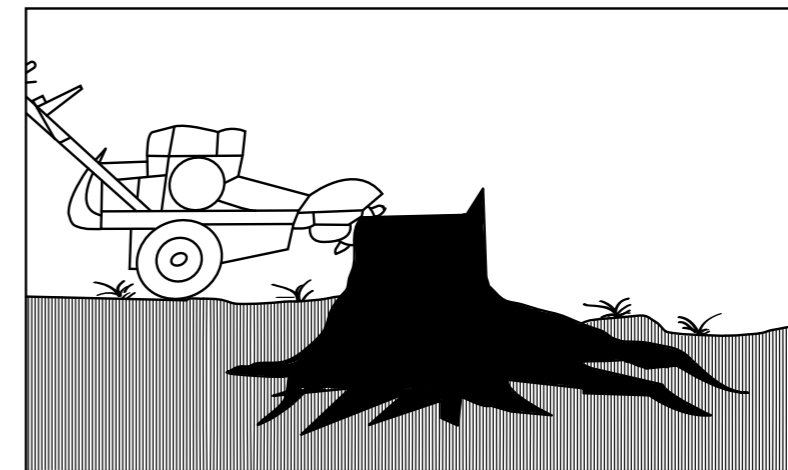
- Never leave controls when the cutting wheel is rotating.

Operating Tips!

- Use smooth, comfortable side to side movements while operating.
- When it is desired to cut smaller roots, it may be more effective to do so before rather than after cutting the stump.
- Should the chip build-up become excessive when cutting, shut off the machine, wait for the cutting wheel to stop rotating, retract the machine from the stump and rake away the chips. It is also possible to use the cutter wheel to push chips off to the side.
- In order to prevent any of the wheels becoming stuck in the hole. Move the grinder to the other side of the stump to continue removal or by filling the hole with chips before continuing.

4.2 Prepare the grinder at the stump.

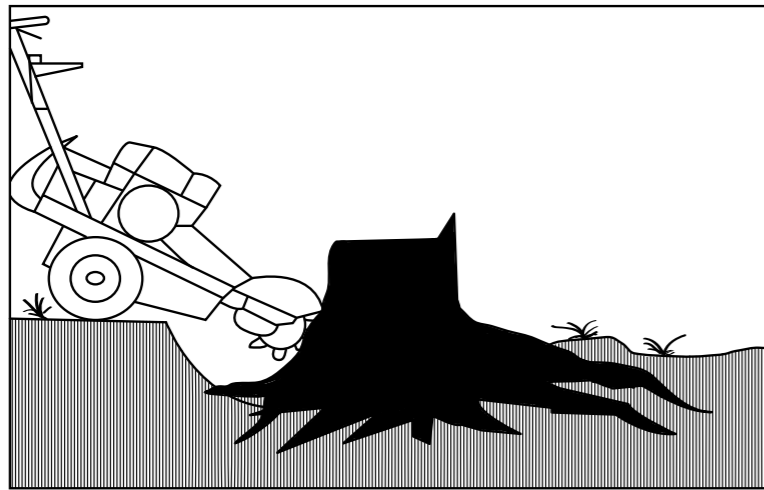
Place it into position with the cutting wheel near the top edge of the stump.



4.3 Removing roots

- Make sure the throttle is set to fast, the cutter wheel will accelerate to cutting speed.

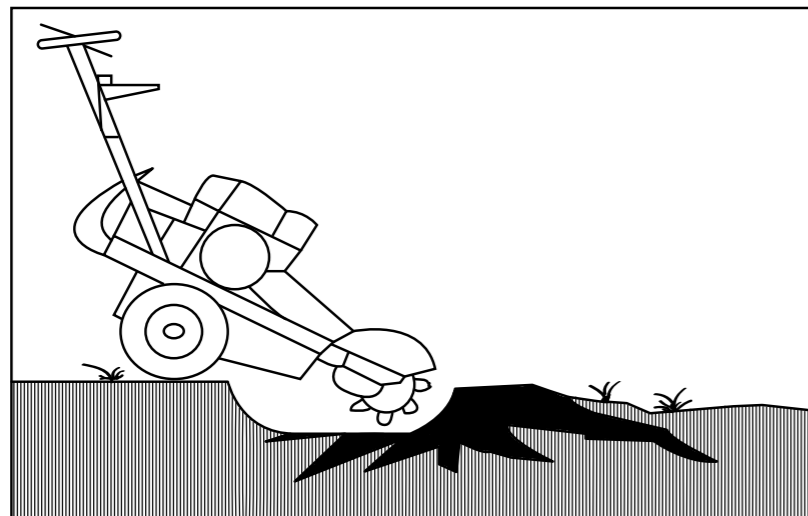
- Swing the cutting wheel to one side, then lower it into the nearest roots that are buried at the foot of the stump.
- Swing the cutting wheel before each sweep, until the roots are sufficiently removed.



- Raise the cutting wheel until the centre of the cutting wheel is just above the top of the stump.
- Allow the cutter wheel to stop, release the brake and reposition the machine.
- Lock the brake again.

4.4 Cutting the full stump

- Make sure the throttle is set to fast. The cutter wheel will accelerate to cutting speed.
- Direct the cutter wheel against the stump, beginning with the nearest top corner of the stump, and steadily sweep it across the stump left and right, cutting away 1/2 inch of wood with each sweep.
- Raise and lower the cutter wheel between sweeps by lowering and raising the control handle.
- Roll the machine forward and back, by pushing and pulling on the control handle. To do this, release the brake. Relock it when the machine has been repositioned and continue cutting.



Continue with final roots removal

Cut the remaining roots as described in STEP 4.2 until satisfactorily removed

4.5 SHUTTING OFF THE GRINDER

- When stopping the machine after normal operation, lower engine speed to slow, and push the emergency switch.
- Set park brake before leaving the controls.
- Shut off the engine by pushing the on/off switch.

4.6 NORMAL SHUTDOWN PROCEDURE

In consideration of your own safety and that of others, you should always use the following normal shutdown procedures before departing from the controls for any reason including cleaning, servicing, transporting or inspecting the stump grinder. Never deviate from this procedure unless so instructed in this manual or in an emergency that requires it.



A rotating cutting wheel is very dangerous. Stand at controls and ensure that the cutting wheel comes to a complete stop before doing anything else.

- Move the engine throttle to the slow position.
- Push the emergency (on/off) switch to stop the engine.
- Set park brake before leaving controls.

4.7 EMERGENCY SHUT DOWN PROCEDURE

- Immediately push the emergency (on/off) switch for the engine will be shut off.
- Be sure to allow all moving parts to come to a complete stop.
- Pull the brake lever to engage the brake.
- Rectify the emergency situation and return to normal operation.

5. Refueling

- Before removing gas cap, turn engine off and allow to cool for at least two minutes.
Note: A running or hot engine can ignite fuel.
- Remove grinder gasoline cap.
- Add gasoline through the fill opening
 - Use only an portable gasoline container to transfer the gasoline to the grinder's tank.
 - Be aware of safety warning and instructions below for avoiding static electric caused fires.
 - Do not overfill.



WARNING: Static electric spark hazard

A static electric spark can explosively ignite gasoline vapor, resulting in a flash fire that could cause serious injury or death. See "Special Safety Information on Static Electricity" at end of this manual.

- Clean up gasoline spills / splashes immediately.
- If possible, move the grinder away from spilled gasoline on the ground.
- Wipe up spilled gasoline, and wait 5 minutes for excess gasoline to evaporate before starting engine.
- Gasoline soaked rags are flammable and should be disposed of properly.
- If gasoline is spilled on your skin or clothes, change clothes and wash skin immediately.

- Replace gasoline cap securely before starting engine.
- Store extra gasoline in a cool, dry place in an tightly sealed container.
- Filling towable units or portable containers at service stations:
Even if you have a towable unit, avoid static electric sparking while filling the gasoline tank:
- Never fill the grinder's gas tank directly from the fuel pump. The grinder's tank is not grounded and high velocity flow from the pump can cause static electricity build-up. Use an portable container to transfer gas to the grinder's tank.
- Use a portable container made of metal or conductive plastic. This is preferred because it dissipates static charge to ground more readily.
- Never fill a portable gas container while it is sitting inside a vehicle, trailer, trunk, or pick-up truck bed. ALWAYS place container on the ground to be filled.
- Keep nozzle in contact with container while filling. Do not use a nozzle lock-open device.

6. Storing the Machine

When you are finished using the grinder and it has cooled, you must:

- Cool engine before storage.
- Clean the grinder.
- Inspect for worn or damaged parts.
- Choose covered storage location.
- Prevent accidental starting.
- Plan on exercising the engine at least monthly unless the grinder is prepared for long term storage.

Detailed instructions are provided below.

Cool Engine	Let engine cool for at least 30 minutes before storing. A hot engine can be a fire hazard.
Clean Grinder	Clean all grease, dirt, mud and other foreign matter from the machine. Touch up paint damage to prevent rust.
Inspect Grinder	Inspect the machine for worn or damaged parts and tighten any nuts or screws that may have become loose. Pay particular attention to the cutting teeth.
Choose a Storage Location	Store the grinder in a location that is: <ul style="list-style-type: none"> ● Clean and dry ● Away from sources of heat, open flames, sparks, or pilot lights, even if the grinder's gas tank is empty. Residual gasoline could ignite. ● Away from extreme high or low temperatures. ● Cover it for extra protection. ●

Remove Spark Plug

Remove spark plug, in order to ensure the grinder cannot be started in a storage location or by untrained persons or children.

Start Grinder Every 4 Weeks

The grinder should be started regularly. At least every 4 weeks, start the engine and let it run for 10 to 15 minutes. Monthly exercising of the grinder will dry out any moisture that has accumulated, lubricate cylinders, and clean out old gas in the carburetor. Moisture, old gas, and dry mechanical parts cause deterioration in stored engines.

Prepare Engine for Long Term (Seasonal) Storage if needed

If you will not be able to start the grinder regularly, you must prepare the engine for long term storage to prevent gum deposits from forming and causing malfunction of the engine.

Prepare engine for long term storage by:

- Removing all gasoline from the tank and carburetor
 - OR
 - Adding fuel stabilizer to the gasoline (following manufacturer's instructions)
- Fuel stabilizer steps:
1. Ensure gas tank is full.
 2. Add fuel stabilizer to fuel tank.
 3. Run engine at least 10 minutes after adding stabilizer to allow it to enter the fuel system.
 4. Shut off engine.
 5. Disconnect spark plug wire and remove spark plug.
 6. Add one teaspoon oil through spark plug hole.
 7. Place rag over spark plug hole and turn starter (or pull the recoil) a few times to lubricate the combustion chamber.
 8. Replace spark plug, but do not reconnect the spark plug wire.



WARNING: Gasoline fire / explosion hazard

Gasoline is highly flammable and explosive. Drain the fuel into an approved container OUTDOORS and far away from open flame. NEVER store an engine with fuel in the tank indoors or in poorly ventilated spaces where fuel vapor can come in contact with

- Static electric sparks.
- Sparks from electric wiring, batteries, or running engines.
- Sources of heat (such as a hot engine or exhaust).
- Open flames, including pilot lights.

WARNING

ALWAYS shut off the engine, make sure the engine is cool, and disconnect the spark plug before cleaning, adjusting, or servicing the grinder. Make sure all guards and shields are replaced before using.

MAINTENANCE

Perform regular Maintenance

Perform periodic maintenance as directed in this manual to keep the grinder in safe working condition.

Follow Safety Rules

Read and follow these safety rules whenever you will be servicing the grinder:

- Turn off grinder. Always turn off grinder and remove spark plug or spark plug wire before working on the engine or grinder to prevent accidental starting.
- Replace guards/shields. Make sure all guards and shields are replaced after servicing the grinder.
- Burns. Muffler will be hot even after unit is stopped. Allow unit to cool before servicing.
- Repair. Major service, including the installation or replacement of parts, should be performed only by a qualified electrical service technician.
- Replacement parts. If a part needs replacement, only use factory approved repair parts. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the grinder and will void the warranty.

Perform Engine Maintenance

Perform engine maintenance as specified in the engine owner's manual.

Engine maintenance items include:

- Oil and oil filter changing
- Air filter check/replacement
- Spark plug cleaning and replacement
- Fuel filter check/replacement
- Fuel tank cleaning.

Inspect Fuel System / Check for Leaks

Inspect the fuel system and check for leaks on a regular basis.

Look for: signs of leaks or deterioration, chafed or spongy fuel hose, loose connections, loose or missing fuel hose clamps, damaged gasoline tank, or defective gasoline shut-off valve.

PART IV

MAINTENANCE

Lubricate

Cutter shaft bearings should be greased.
The cutter shaft bearing is greased by pumping grease into zerks located on the housing of the bearing. Lubricate after every 20 hours of use.

Grease Specifications	
Soap Type	Lithium Complex
NLGI Grade	#2
Dropping Point	230°C (446°F)
Additives	Corrosion and Oxidation inhibitors, EP optional
Viscosity Index	80 Minimum

Check and Adjust Brake

Check that the brake is functioning properly.

- Lock the brake, push down on handle bar so that cutter wheel is off the ground.
- Push or pull the grinder- if the brake is loose, the wheel will rotate.

To adjust braking tension:

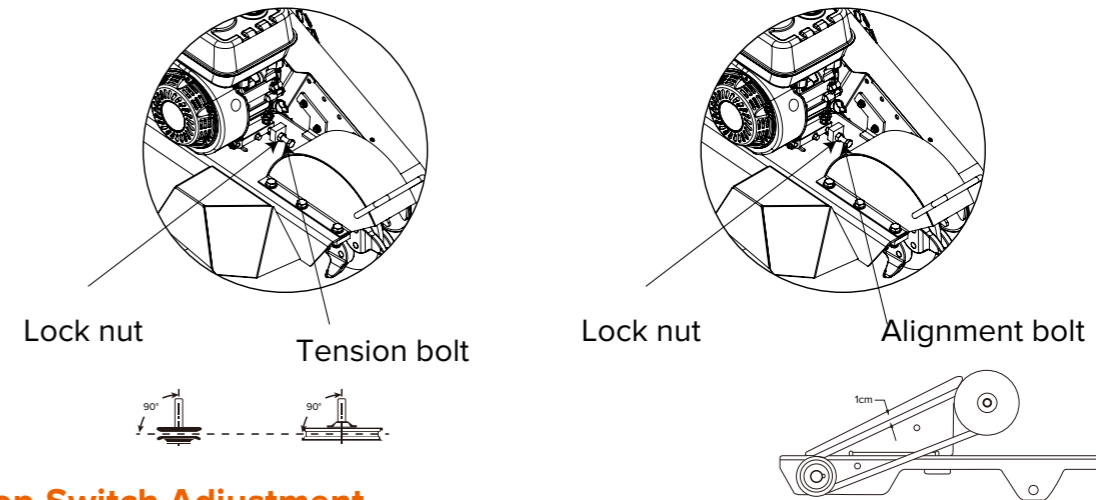
- Unscrew set screw.
- Turn knob clockwise to increase tension or counter-clockwise to decrease tension.
- Once you have set the brake to the proper tension, tighten set screw to lock adjustment knob.

Belt Tension Adjustment

Note: Belt tension and alignment are inter-related. Do not adjust one without checking the other.

- Remove belt guard.
- Loosen (4) engine base (mount) bolts.
- Loosen lock nuts on tension bolt and alignment bolt.
- Turn tension bolt clockwise to increase belt tension and counterclockwise to decrease belt tension.
- Check that the pulleys are aligned using a straight edge. To achieve proper pulley alignment you may need to adjust the alignment bolt. This bolt will serve as an adjustment point to counter the tension in the belts, which may cause the engine pulley to be misaligned with the cutter wheel pulley. Note: Set screws in pulley have a torque specification of 25.3kg/m.
- Belt tension is proper when a 2.27kg to 3.18kg force will deflect the belt 2/5" (1cm) at the midpoint.
- Retighten all loosened nuts and bolts.
- Reassemble belt guard.

- Belt tension is proper when a 2.27kg to 3.18kg force will deflect the belt 2/5" (1cm) at the midpoint.
- Retighten all loosened nuts and bolts.
- Reassemble belt guard.



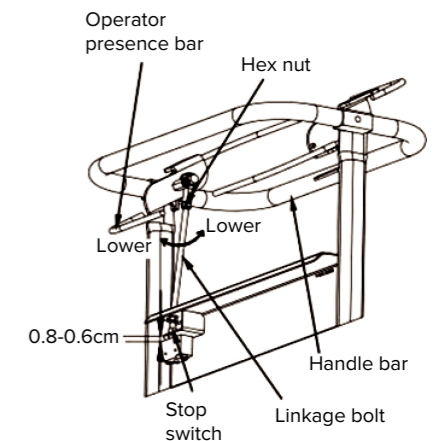
Stop-Switch Adjustment

WARNING: Never attempt to alter, modify or override this switch.

Never attempt to alter, modify or override this switch.

If stop-switch ever needs to be replaced or adjusted follow the below directions.

1. Loosen Hex Nut.
2. Turn the Linkage Bolt clockwise to lower or counter-clockwise to raise the point of interaction with Stop Switch. To set the proper interaction distance, grip the Operator Presence Bar & Handle Bar together and lower the Linkage Bolt onto the Switch Button until the switch button cannot be depressed any further. Then raise the linkage bolt one turn (counterclockwise).
3. Tighten Hex Nut.
4. Verify operability of stop switch before operating machine by releasing the operator presence bar next to the handle bar. You should hear a "CLICK", signifying that the Linkage Bolt has been adjusted properly.

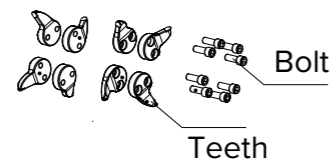


Installing Teeth

Among the most critical elements of the stump grinder is the cutting wheel. It is also the most subject to damage and wear. In the course of grinding stumps it not only makes contact with the wood, but also encounters numerous abrasives and objects in the stump's environment, such as dirt, stones, large rocks and buried scrap. The loss and wear of cutting teeth can significantly impair the efficiency and performance of the stump grinder. Therefore, it is important to make frequent inspections of the condition of all the cutting teeth and to replace any damaged or worn teeth

Installing Teeth

Thread in the bolt through the cutter wheel and into the teeth as shown, then tighten. Bolt should be torque to 60ft/lbs.



Maintenance Schedule



CAUTION: Before attempting any maintenance, be sure that the engine is shut off, the spark plug wire is removed, and the engine is cool to the touch!

Item (What to check or action req'd)	Daily	Each Use	10 hours	20 hours	40 hours
Bearing, Shaft-Grease				×	
Belt Tension-Tension					×
Bolts-Tightness			×		
Engine	See manual				
Gasoline-Amount		×			
Safety Switch-Operation		×			
Warning Decals-Legible	×				
Tires, Flaps-Condition	×				
Wires, Cables-Condition		×			
Cutter Teeth-Sharpness		×			

IMPORTANT:

If a part needs replacement, only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the grinder.

PART V

IMPORTANT SAFETY INFORMATION

A-weighted sound power level emitted by the machine: 103.8dB for model SGR1500.

A-weighted emission sound pressure level at the operator's station: 90.8dB for model SGR1500.

The vibration total value to which the hand-arm system is subjected, less than 6.9 m/s² for model SGR1500

The range of temperature in which the machine is intended to operate and be stored is 5-40°C;

Summary of Import Safety Information

This section provides a summary of the various safety procedures and measures that have been presented throughout the manual. Keep this summary handy and refer to it to refresh your memory about how to safely use your grinder.

WARNING

Carefully read and make sure you understand the following safety information before using the grinder. Improper use or maintenance of the grinder can result in serious injury or death from fire/explosion, carbon monoxide poisoning, lacerations, entanglement or burns. Damage can also occur to windows, siding, vehicles, and bystanders from chips and debris which can become projectiles.

General

- Read manual. Read this Owner's Manual and the engine Owner's Manual completely before attempting to use and service the grinder. Serious injury or death can result if safety instructions are not followed.
- Instruct operators. The grinder owner or rental company must instruct all operators in safe grinder set-up and operation. Do not allow anyone to operate the grinder who has not read the Owner's Manual and been instructed on its safe use. Make sure Owner's manual is within the attached storage tube on the grinder.
- Adults only. Only trained adults should operate and service the grinder. Do not let children operate.
- Under the influence. Never operate, or let anyone else operate, the grinder while under the influence of alcohol, drugs, or medication.
- Intended use. Carefully read about and understand the intended use of this grinder. Do not use for other purposes, as unforeseen hazards or equipment damage may result.
- Controls and safety labels. Learn how to use the machine and its controls safely. Understand and follow all safety labels.
- Weather. Never use in foul, bad or questionable weather, which causes a slippery ground condition.

Prohibition Against Modifications

Never modify or alter the grinder in any way. Modifications can create serious safety hazards and will also void the warranty.

- Fuel/exhaust system. Never modify the exhaust system, fuel tanks, or fuel lines. Carbon monoxide poisoning, fire, or explosion could result.
- Guards. Do not operate grinder unless all guards and cover shields, which prevent access to moving parts and pinch points, are in place. Failure to guard the power transmission mechanisms may result in serious injury or death.

Safety - Before Use

Know how to operate

- Review safety rules. Before use of this grinder, review the "Rules for Safe Operation."
- Know how to operate. Be thoroughly familiar with all controls and with the proper use of the equipment. Know how to stop the grinder quickly if needed.

Getting Ready

- Flying debris. Clear area of objects such as stones, toys, steel wire, etc. that could become caught in moving machine parts and ejected as a projectile.
- Operate OUTSIDE only – dangerous carbon monoxide exhaust! Grinders give off carbon monoxide exhaust, a poisonous gas that can kill. You CANNOT smell it, see it, or taste it. ONLY run grinder OUTDOORS and at least 20 feet (6m) from the home, away from windows, vents and air intakes, to allow proper ventilation. If you start to feel sick, dizzy, or weak while using the grinder, shut off the engine and get to fresh air RIGHT AWAY. NEVER run grinder engine inside homes, garages, sheds, or other semi-enclosed spaces. These spaces can trap poisonous gases.
- Cooling ventilation. The grinder needs adequate, unobstructed flow of air to allow for proper cooling of engine and grinder head. Do not allow debris to accumulate and block airflow.
- Transporting. During transporting, take precautions to make sure stump grinder will not tip over and cause a fuel leak hazard.
- Hot exhaust - fires. Exhaust from engine can be extremely hot and cause fire. Position muffler at least 7 feet (2m) from combustible objects during operation.

Personal protective equipment

- Hearing protection. The use of ear plugs or other hearing protection device is recommended for those in close proximity to the grinder while it is operating.
- Eye protection. Wear approved eye protection when operating the grinder.
- Face protection. A helmet with a full face visor or mesh visor with protective glasses is recommended.
- Loose / dangling. Loose or dangling apparel, jewelry or hair can become entangled in moving parts. Never wear jewelry or loose-fitting clothing when operating the grinder.
- Long pants. Wear long, heavy-duty pants to protect legs from ejected materials.

Gasoline Safety

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel. Use extreme care when handling gasoline:

- Fuel outdoors. Fill fuel tank outdoors – never indoors. Gasoline vapors can ignite if they collect inside an enclosure. Explosion can result.
- Use approved container. Never pump fuel directly into engine at gas station. Static charge can build and ignite fuel. Use an UL approved fuel container to transfer gas to the engine.
- Running / hot engine. A running engine is hot enough to ignite fuel. Never add fuel or remove gas cap if engine is running or still hot. Stop the engine and allow to cool at least two minutes before adding fuel.
- Heat / flames / sparks. Keep sources of heat, flame, or sparks away while adding fuel.
- Don't fill to the top DO NOT overfill the gas tank. Allow at least 1" of empty space below the fill neck to allow for fuel expansion and operation on slopes.
- Don't fill to the top. Do not fill the gas tank to the top. Gasoline may spill when operating on a slope.
- Replace cap. Replace gas cap securely before starting engine.
- Spills. Clean up fuel spills immediately. Move grinder away from spilled fuel on the ground. Wipe fuel off engine and wait 5 minutes for excess fuel to evaporate before starting engine. Gas soaked rags should be disposed of properly.
- On skin / clothes. If gasoline is spilled on your skin or clothes, change clothes and wash skin immediately.
- Inspect fuel system. Check fuel system on a regular basis. Look for signs of leaks, deterioration, chafed or spongy fuel hose, loose or missing fuel hose clamps, damaged fuel tank, or a defective fuel shut-off valve. Do not start grinder until needed repairs have been completed.
- Gasoline storage. Store gasoline in a cool, dry place in an UL-approved, tightly sealed container away from children.

Safety - During Use

- Safety equipment / controls. Always operate the grinder with all safety covers, guards, and barriers in place and in good working order, and all controls properly adjusted for safe operation.
- Controls. Stay in the OPERATOR POSITION while actuating controls.
- Know how to stop. Know how to stop the grinder quickly if needed by releasing the operator presence bar. If this does not work, do the following in order until unit is stopped. 1. Push the stop button on the control panel. 2. Use on/off switch on engine (or ignition switch on electric start models). 3. Engage full choke by flooding the engine.
- "Kickback". Machine can experience significant "kickback" when operating or first coming into contact with the stump.
- Slipping/Falling. Operating in wet or icy conditions could lead to losing your footing and slipping or falling.

- Damaged. Do not operate the grinder with damaged, missing, incorrectly adjusted, or broken parts.
- Check for gas leak before starting. After opening gasoline valve, smell for gas before starting engine. If you smell gas, DO NOT start engine. DO NOT light a match. DO NOT flip on an electrical switch. Exit area immediately and call fire department.
- Carbon monoxide exhaust. The running engine gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it. If you start to feel sick, dizzy, or weak while using the grinder, shut off the engine and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.
- Other exhaust dangers. This product contains or emits chemicals to cause cancer, birth defects or other reproductive harm. Avoid inhalation of exhaust.
- Smoking/sparks. Never smoke near the running grinder, and never operate near sources of sparks or flames.
- Hot muffler. Never touch hot muffler or hot exhaust manifold. Exhaust and engine parts can be very hot and will burn you.
- Machine's moving parts. Keep hands, feet, and apparel away from drive belts, cutter wheel, and other moving parts. Never remove any drive belt or guard while the unit is operating. Contact with belt or rotating teeth will cause personal injury.
- Refueling. DO NOT refuel the engine until it has cooled at least 30 minutes.
- Malfunction during operation. Always shut the machine off if any unusual noise or vibration occurs.
- Vibration. Overexposure to machine vibration on a daily basis may lead to circulatory or nerve damage.
- Adjusting / repairing. Always turn off grinder and remove spark plug or spark plug wire before working on the grinder to prevent accidental starting.
- Cleaning the Jam: If the machine is jammed, stop the engine and remove the spark-plug wire before attempting to clear any jams in the unit. Stop all work, turn off stump grinder, unplug spark wire and ensure the engine is turned off and cooled before performing any diagnostics or repairs.

Safety - After Use

- Cool engine before storing. Let engine cool for at least five minutes before storing. A hot engine can be a fire hazard.
- Shut off fuel supply. Make sure gasoline shut-off valve is in the OFF position.
- Prevent accidental starting. When grinder is not in use, remove key from starter (electric start engines) and secure in a safe location, or remove spark plug in order to ensure that grinder cannot be started in a storage location or by untrained persons.
- Storage location. Store the grinder in a dry location away from sources of heat, open flames, sparks or pilot lights – such as water heaters, space heaters, furnaces, clothes dryers, or other gas appliances – EVEN IF the grinder's gas tank is empty. Residual gasoline could ignite.

- Exercise regularly. Exercise grinder every four weeks to dry out moisture that accumulates in the windings. If grinder cannot be exercised on a regular basis, prepare grinder for long term storage.

Safety - Inspection / Maintenance

Inspect and maintain your grinder on a regular basis and repair as needed to keep it in safe working condition:

- Turn off grinder. Always turn off grinder and remove spark plug or spark plug wire before working on the engine or grinder to prevent accidental starting.
- Replace guards / shields. Make sure all guards and shields are replaced after servicing the grinder.
- Burns. Do not touch hot muffler. Muffler will be hot even if unit is stopped. Allow unit to cool before servicing.
- Replacement parts. If a part needs replacement, only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the grinder and will void the warranty.

Special Safety Information on Static Electricity

Static electricity and filling gasoline:

Static electricity can initiate from ungrounded gasoline tanks or containers, from flowing gasoline, and from persons carrying a static electric charge

Static electricity on numerous occasions has explosively ignited gasoline vapors that were present during fueling processes, resulting in serious burns to nearby persons. To avoid static electricity while fueling, certain steps must be followed before and during the fueling process in order to minimize and safely dissipate static charge build-up.

Filling Portable Containers at Service Stations:

Use a portable container to fill grinder tank. Never fill the grinder's gas tank directly from the service station's fuel dispenser pump – the grinder's tank is not grounded and the high velocity flow of gasoline from a fuel pump can cause static electric build-up. Use an approved portable container to transfer gasoline to the grinder's tank.

- Use a portable container made of metal or conductive plastic. It will dissipate charge to ground more readily.
- Fill container on the ground. Never fill the portable gas container while it is sitting inside a vehicle, trailer, trunk, or pick-up truck bed. ALWAYS place container on the ground to be filled.
- Touch a grounded metal object before starting. Always dissipate static charge from your body before beginning the fueling process by touching a grounded metal object at a safe distance away from fuel sources.
- Keep nozzle in contact with container. Keep fuel dispenser nozzle in contact with the portable container at all times while filling at a service station. Do not use the nozzle lock-open device on the dispenser hose.

About static electricity and fueling

Many common objects can accumulate and retain a static electric charge. Objects made of non-conductive materials (e.g. plastics) easily accumulate and retain static electric charge, as can objects made of conductive material (e.g. metal, water) if they are not electrically grounded. The static electric charge on an object, such as a human body or plastic fuel tank/container, can reach as high as several thousand volts!

A static electric spark can be generated if the static electric charge stored on an object "jumps" to another, less charged object. Such a spark can ignite invisible gasoline vapors that are present during fueling situations.

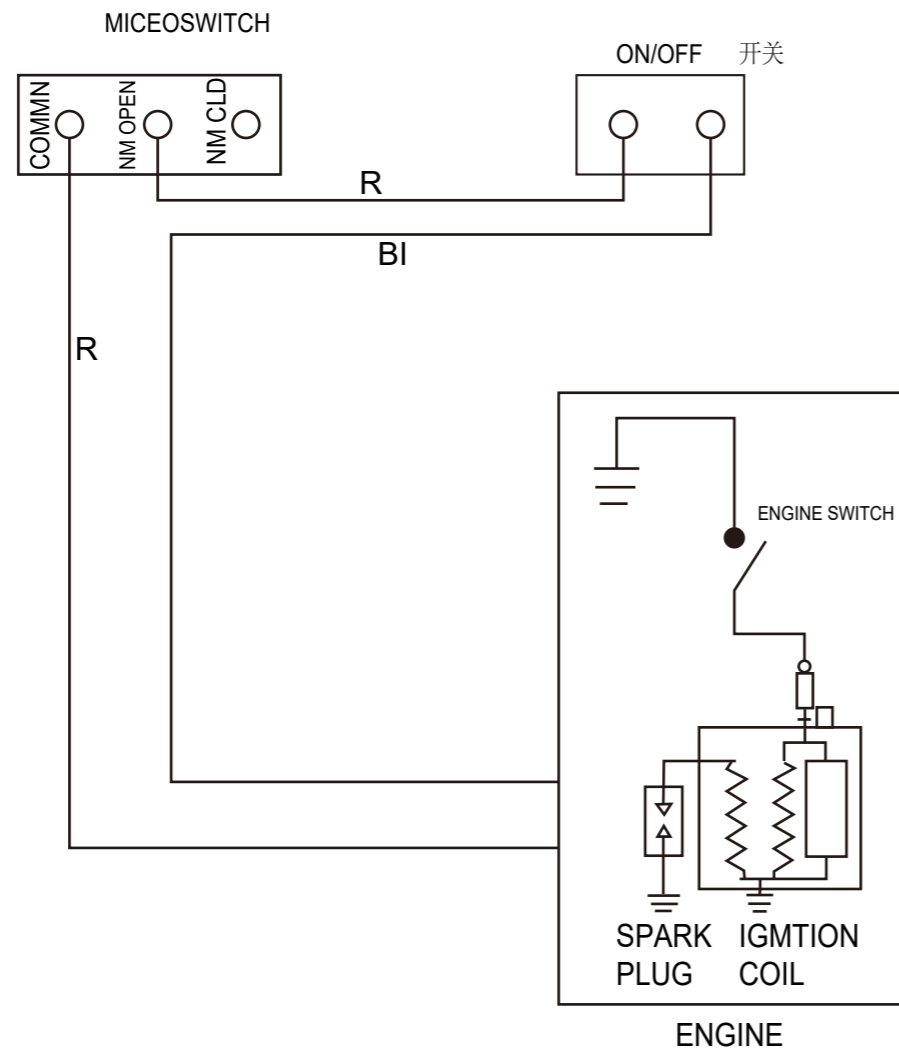
Typical sources of static electric hazards during fueling

The following objects can accumulate a static electric charge and cause an ignition spark in typical fueling situations:

- Ungrounded tanks/containers. Any ungrounded fuel tank or container can accumulate a static electric charge as a result of contact with other objects or friction during transportation. This static electricity can discharge as a spark to the grounded gasoline dispenser nozzle, as the nozzle is first brought close to the tank/container at the beginning of the fueling process.
- Flowing gasoline. Most people are not aware that gasoline accumulates static electric charge while flowing through a hose or pipe. This charge then transfers to and accumulates in the gas tank or container that is being filled. The total amount of charge accumulation depends on the amount of gas pumped into the container, the speed with which it is pumped, and whether or not the tank/container is grounded. If sufficient static electric charge accumulates in the fuel tank or container during the fueling process, the tank/container may discharge a spark to the grounded gasoline dispenser nozzle.
- Persons. A person dispensing the gasoline can carry a static electric charge on their body, typically resulting from contact with their car seat or electronics. The static electricity can discharge as a spark between that person's hand and either the grounded dispenser nozzle or the fuel tank opening.

Transportation

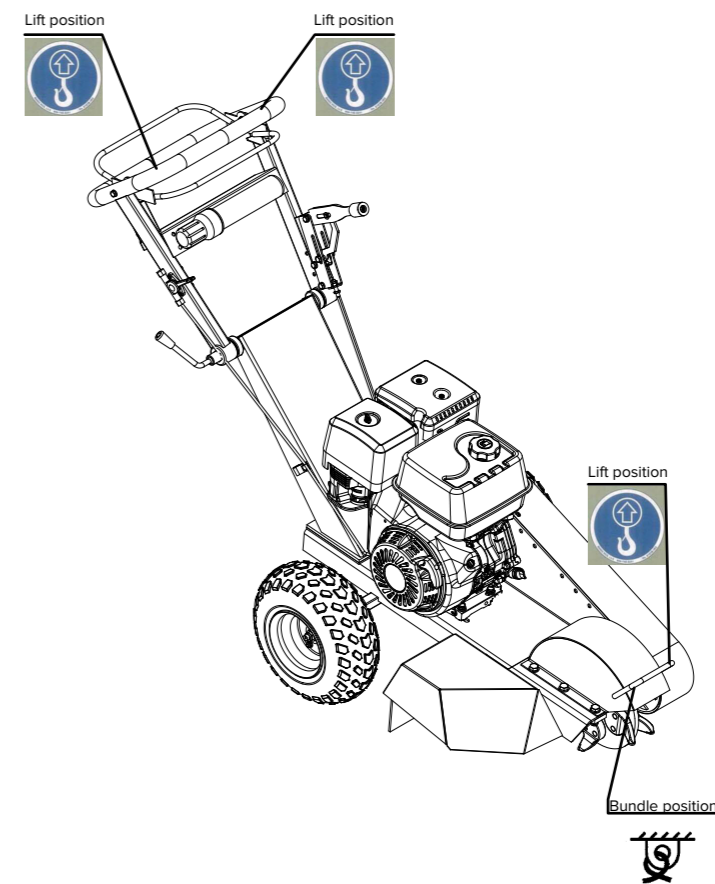
The stump grinder is designed to be transported via a van or small trailer. The machine is equipped with grab bars that are to be used for both lifting the machine, and strapping it down. This machine weighs approximately 110kg and should only be lifted using correct apparatus or an adequate number of people working as a team.



COMBINATION SWTCH

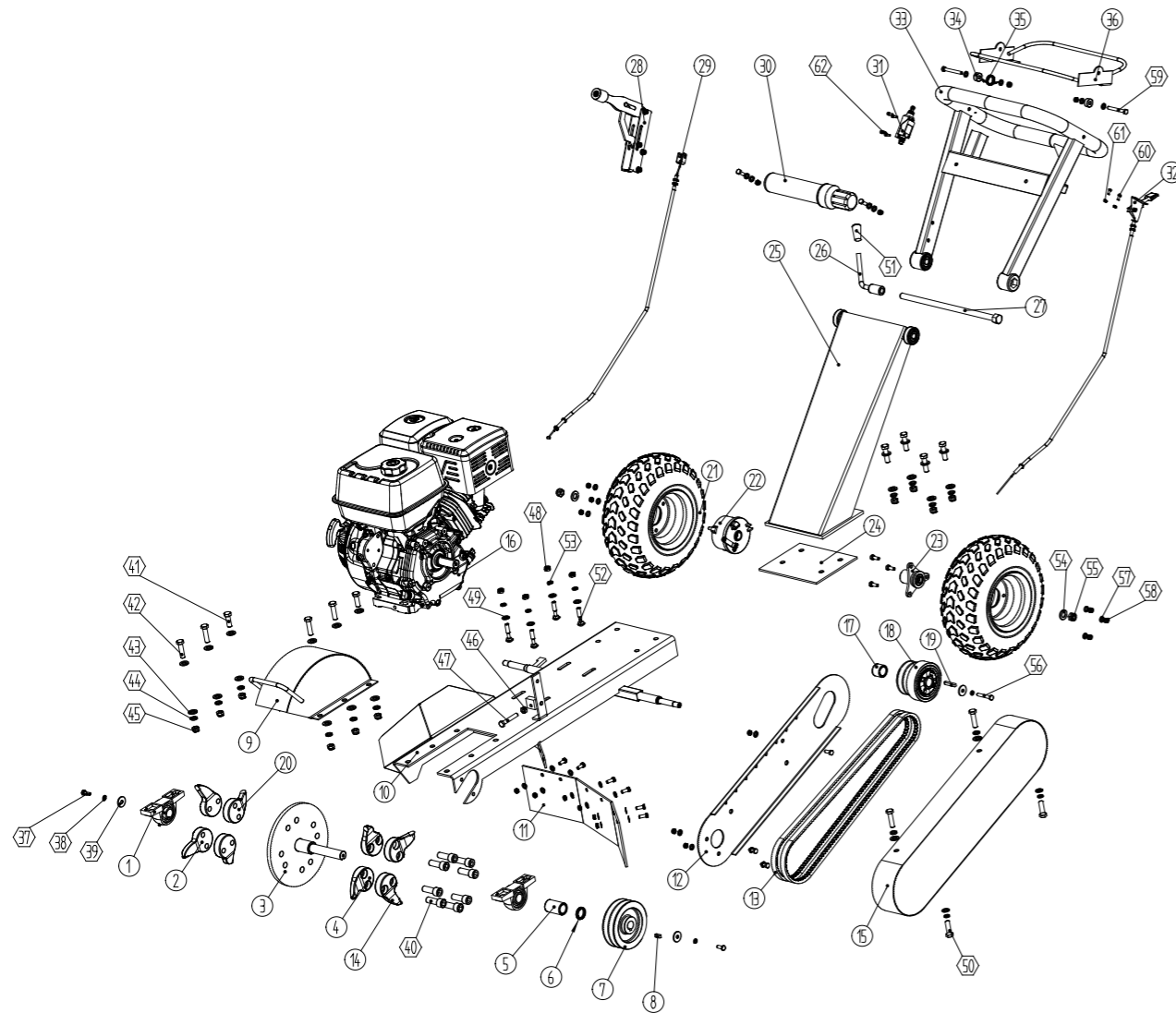
W	White	Br	Brown
G	Green	Lg	Light Gren
R	Red	Y	Yellow
Bu	Blue	Bl	Black

	IG	E	FS	G
OFF	○	○	○	○
ON				



Note:
 Lift the machine at the point of lift label shown.
 Tie the machine at the point of tying label when transport for long distance to keep the machine stable.
 There are legal road requirements for towing equipment and trailers (such as lighting and licensing). It is the owner's responsibility to be aware of these laws and to adhere to them.

Exploded View



Parts List

Item	Description	Qty.	Item	Description	Qty.
1	Bearing	2	34	Spring Pad	2
2	"A" knife	2	35	Torsion Spring	1
3	Cutter Wheel	1	36	Lever	1
4	"B" knife	2	37	M8x0 Hex bolt	16
5	Axle sleeve	1	38	Spring washer 8	4
6	Binding Ring	1	39	Lock ring	3
7	Belt pulley	1	40	M16x45 inner hex bolt	8
8	Key	1	41	M12x35 hex bolt	2
9	Wheel cutter shield	1	42	M12x45 hex bolt	8
10	Frame	1	43	Flat washer 12	20
11	Rubber baffle	1	44	Spring washer 12	10
12	Inner belt guard	1	45	M12 hex lock nut	10
13	Belt	2	46	M10 hex nut	1
14	"D" knife	2	47	M10x60 hex bolt	1
15	Outer belt guard	1	48	M10 hex lock nut	6
16	Engine	1	49	Flat wahser 10	8
17	Crankshaft sleeve	1	50	M10x100 hex bolt	1
18	Centrifugal clutch	1	51	M10x110 hex bolt	1
19	Crankshaft key	1	52	M10x50 step bolt	4
20	"C" knife	2	53	Spring washer 10	4
21	Wheel	2	54	Flat washer 14	2
22	Drum brake	1	55	M14 hex lock nut	2
23	Flange	1	56	M8x50 hex bolt	1
24	Rubber pad	1	57	Flat washer 8	31
25	Handhold assembly	1	58	M8 hex lock nut	19
26	Clamp handle	1	59	M8x65 hex bolt	2
27	Hexagon bolt M16x360	1	60	M5x12 hex bolt	2
28	Brake handle	1	61	M5 hex lock nut	2
29	Brake cable	1	62	M5x12 inner hex bolt	4
30	Manual holder	1			
31	Switch	1			
32	Throttle cable	1			
33	Handrail	1			